There was dilatation of the right, with concentric hypertrophy of the left heart.

Remarks.—One case only under this head need be presented, and I would simply call attention to the fact that the diagnosis was practically accidental; for no symptom referable to the heart had ever, so far as known to the patient's family, been complained of.

The cerebral symptoms are of course easily explained, and the hyperæmia due to the dilated condition of the right auricle is a more or less familiar circumstance, but the total absence of cardiac symptoms even up to the fatal termination, and the final prominence of cerebral symptoms, with so grave an organic lesion as indicated, constitute an anomaly not without practical bearing upon our daily experience.

The autopsy revealed no lesion of the brain, although a general hyperæmia of the tissues was observed.

ART. VIII.—*On the Nature and Duration of Yellow Fever, as shown by Graphic Temperature Charts of Typical Cases; with some remarks on the aid to diagnosis and prognosis, and indications for treatment, furnished by the clinical thermometer.* By GEO. M. STERNBERG, M.D., Brevet Major and Assistant Surgeon U. S. Army. (With four plates of temperature charts.)

THE materials at my command, for such a study as may be expected from the heading of this paper, are by no means so ample as could be desired. But, as I shall shortly point out, they have an especial value of their own which may, to some extent, compensate for a manifest deficiency in number. The generalizations, at which I arrive, may not be sustained when submitted to the test of more extended observations. But the study will, at least, prove profitable by inducing some of the excellent practitioners of medicine in the South, who have not yet adopted the use of the clinical thermometer, to resort to it, not only for their own satisfaction, and in the interests of their patients, but for furnishing additional graphic dilineations of the course of yellow fever. And, also, of the various forms of malarial fevers, which have not yet been sufficiently investigated by this method.

My materials for studying the natural history of yellow fever (so far as the temperature is concerned) are the graphic tracings, given in the accompanying plates, and one hundred and three similar tracings, given in a valuable brochure, recently published in Paris and New Orleans, by Dr. J. C. Faget.[1]

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[1] The Type and Specificity of Yellow Fever. Published by Am. Sutton, 167 Rue Royale, New Orleans.

Five of the thirty-seven tracings on my plates are taken from the work of Dr. Faget, viz., Nos. 5, 6, 7, 25, 26. Of the remaining thirty-two, sixteen are from my own observations, and sixteen from observations made by medical officers of the navy during the recent severe epidemic at the Pensacola navy yard. (Kindly furnished me by Surgeon Tryon, U. S. Navy.)

Four of my tracings are from cases which occurred at Governor's Island, N. Y. harbor, in 1870.[1] Ten are from cases at Fort Barrancas, Fla., in 1873, and two from cases at the same place in 1874.

I consider these thirty-two cases particularly valuable for such a study as I propose, for the follow reasons: (*a*) Three different localities (Governor's Island, Fort Barrancas, and Pensacola Navy Yard), and three different years (1870, 1873, and 1874) are represented. (*b*) The patients were mostly adults, in the prime of life (soldiers and marines), known to be in good health previously to the date of their attack. (*c*) In my own cases, and I believe in those at the navy yard, expectant treatment was the rule, and the natural course of the disease was not disguised by the effects of medication. (*d*) All of the localities mentioned are unusually free from ordinary malarial influences (paludal). (*e*) The observations were taken with great care, and, for the most part, the charts are constructed from two daily observations, taken at 7 A. M. and 6 P. M.[2]

I shall first call attention to the tracings on plates 1, 2, and 3, which are all of cases ending in recovery, and will then resort to Dr. Faget's charts for the purpose of testing the correctness of my deductions.

The first thing that strikes the eye upon reference to the charts is that the temperature is at its acme at the very outset of the disease, or soon thereafter. In thirteen of the twenty-six tracings, the first observation gives the highest temperature reached during the whole course of the disease. In sixteen, the acme is reached on the first day. In twenty-three, during the first two days. In two cases the acme is not reached until the morning of the third day, and in one not until the fourth.

In Dr. Faget's tables (excluding all incomplete cases) the acme was reached on the first day in twenty-four cases; on the second day in thirteen; on the third day in twenty-three; on the fourth day in two; and in none at a later date. Of the twenty-five cases in which the acme did not occur until after the second day, all but one are from Dr. Faget's second series of tables, which are from observations taken at Memphis in 1873. The protracted course of the fever, and peculiarities of the temperature curve during this epidemic, as shown by the charts under consideration, will engage our attention again when we come to investigate the duration of yellow fever.

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[1] Some account of this epidemic is given in the number of the *American Journal of the Medical Sciences* for April, 1873. It is greatly to be regretted that temperature observations were only made in a few cases occurring at the close of this epidemic.

[2] My own observations were taken in the axilla, and I believe the same method was adopted at the navy yard.

In my charts the highest temperature recorded was 105.8° in No. 10, and 105.6° in No. 17. In eight cases the acme of temperature was between 104° and 105°; in eleven cases between 103° and 104°; in two cases betwen 102° and 103°; in three cases between 101° and 102°.

In Dr. Faget's charts, a temperature of 106° was exceeded in eight cases. The highest point recorded was 107.2°, in No. 35, second series.

In 7 cases the acme was from 105° to 106°.
In 25 " " " 104° " 105°.
In 44 " " " 103° " 104°.
In 11 " " below 103°.

(Sixteen cases rejected as incomplete.)

Upon further inspection of our plates 1, 2, and 3, it will be seen that after reaching its acme, the temperature falls to the normal or below in a period of from two to six days. This defervescence is sometimes continuous, as in tracings Nos. 1, 3, 4, 5, 6, 7, 8, 10, and 18; is sometimes interrupted by slight evening exacerbations, as in Nos. 2, 9, 11, 15, 17 ; and in two instances, Nos. 20 and 21, is apparently accomplished by three successive steps, or efforts, the peculiar character of which I shall again call attention to.

The initial fever is followed—either immediately, as in Nos. 1, 2, 3, 4, 5, 13, 18, 19, 21, 22, or after an interval of from one to four days, as in Nos. 9, 10, 11, 12—by a reactionary fever, which varies greatly in intensity and duration, and is doubtless to be looked upon as a sequela of the specific fever represented by the first portion of our tracings.

In my own cases, Nos. 1, 2, 3, 4, 9, 10, 21, 22, observations were continued for a sufficient period to fully show the character of this reactionary fever. But in the tracings obtained from the cases at the navy yard, and in those copied from Dr. Faget's tables, no record of it is found. I cannot doubt, however, that a continued use of the clinical thermometer would have shown it to be present in a majority of the cases.

Our charts show, then, that yellow fever is a continued fever of a single paroxysm. This fact, which has long been recognized, is insisted upon by Faget (*op. cit.*), and is amply demonstrated by his tables. The duration of this paroxysm is a point to which we wish to call especial attention, and upon which, we think, our charts throw some new light.

Let us first inquire what standard works upon medicine have to say on this subject:—

Wood, *Prac. of Med.*, vol. i., page 307, says: "These febrile symptoms continue, usually with little or no remission, for a period varying from a few hours to three days, and sometimes even longer. The duration is shorter in the more violent cases, and longer in the mild ; and, in the latter, is sometimes extended to four or five days, with a greater tendency to remission."

In Reynolds (*A System of Medicine*) the duration is stated by Dr. Macdonald, vol. i., page 660, as follows:—

> "Febrile reaction may continue for an indefinite period between a few hours and two or three days, and its duration is said to be in inverse ratio of the violence of the attack."

In Ziemssen (*Cyclopædia of the Practice of Medicine*) the only attempt I find to define the duration of the initial fever is the following passage from the article on yellow fever by Hænisch, vol. i., page 498:—

> "The second stage of the disease, beginning most commonly on the fourth day, is recognized by a noticeable remission of almost all the symptoms."

Faget says on page 10 of his brochure (*loc. cit.*):—

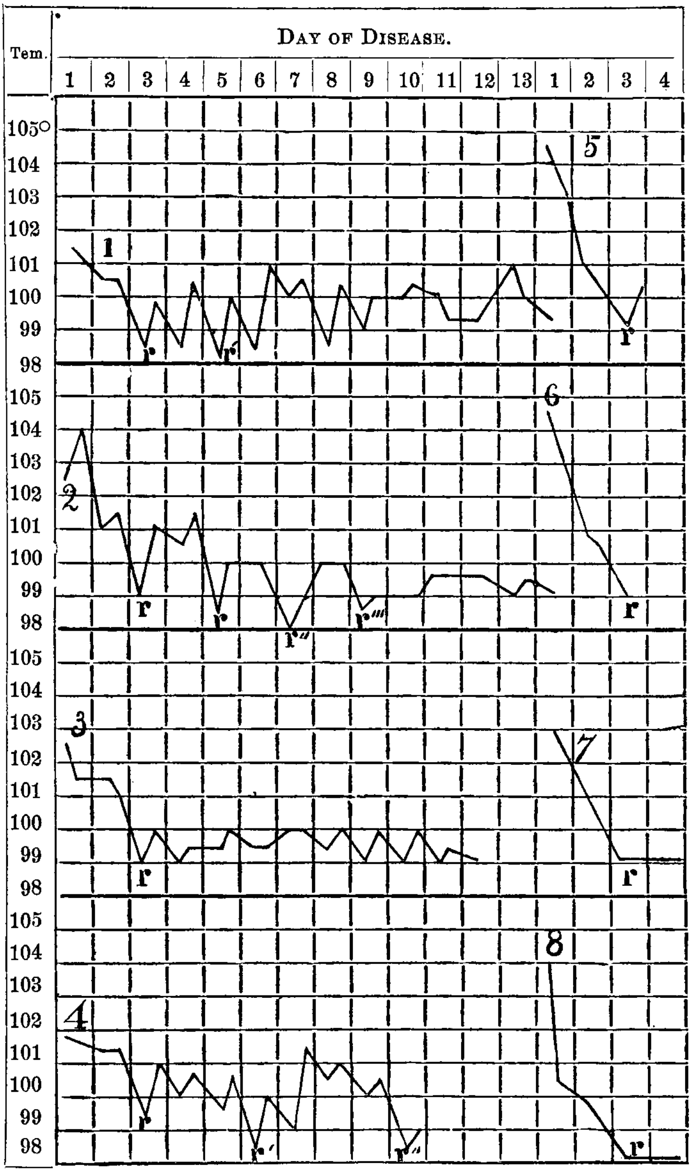
> "The whole of the thirty clinical cases of 1870 combine to contradict the too readily accepted opinion regarding the seemingly *very short* duration of yellow fever. According to La Roche, of Philadelphia, whose authority upon yellow fever is based upon an immense erudition, this duration is *three days.* 'An access of fever of about *seventy hours'* duration, more or less, is followed by complete apyrexia' (24×3=72), p. 426, vol. i. According to our tables, the duration of the *pyretic action* in yellow fever is six to seven days."

On the following page Faget quotes from Wunderlich as follows:—

> . . . "From the fourth to the fifth day the temperature falls rapidly, and descends to the normal number, and even below."

It is not surprising that before the adoption of exact means of measurement, the mistake should have been made of pronouncing the fever, in such cases as are mapped on Plate I., a fever of a few hours' duration. In these cases the flushed face, the cephalalgia, pain in the loins, and acceleration of the pulse, which mark the onset of the disease, quickly disappear, and the patient, *in the course of a few hours*, may pronounce himself to be quite well. An elevation of temperature of two, or even three degrees, may, under such circumstances, escape detection by the most practised touch. An exact method of measurement, however, tells a different story, and we find on Plate I. eight tracings, in which there is a remarkable uniformity in the duration of the initial fever. In all these cases a complete remission (or nearly so) of the fever was found on the morning of the third day. In other words, *the initial fever was of two days' duration.* Four of these cases (Nos. 1, 2, 3, 4) are from my own observations at Fort Barrancas in 1873; one (8) my own at Governor's Island in 1870; and three (5, 6, 7) are from Dr. Faget's tables, as having occurred at New Orleans in 1870. I do not find in the 140 cases mapped by Dr. Faget and myself any in which the temperature fell to the normal in a less period of time, with the single exception of my case No. 11 on Plate IV. This case puzzled me at the time, and is an exceptional one in my experience, by reason of the short duration of the initial fever, and the fact that a relapse occurred after an interval of sixteen days, in which the fever was very protracted, and during which the patient trembled on the border line between life and death for a full week. We have

PLATE I.



No. 1. Male, aged 26; Barrancas, Florida, 1873.
No 2. " " 27; " " "
No. 3. " " 30; " " "
No. 4. " " 28; " " "
No. 5. Unknown; New Orleans, 1870, from Dr. Faget's tables.
No. 6. " aged 21; " " " " " " "
No. 7. " " 8; " " " " " " "
No. 8. Male, " 30; Governor's Island, "

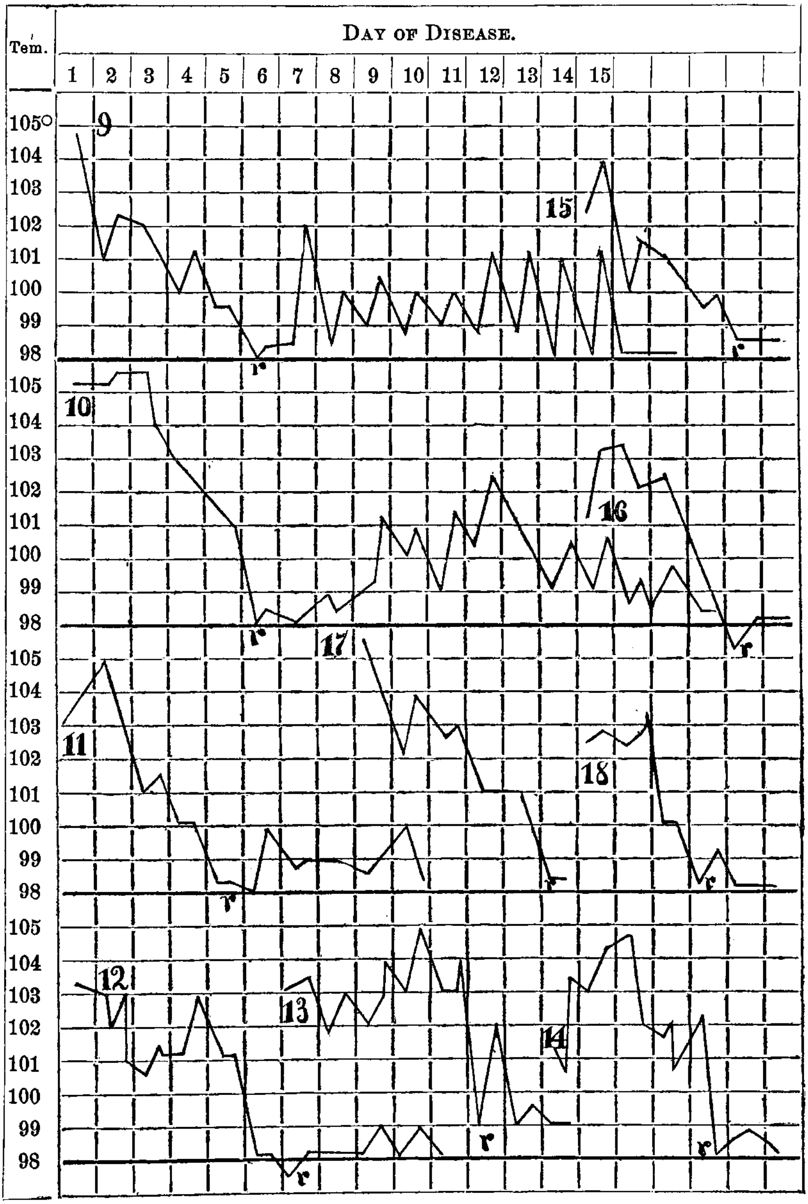
abortive cases of typhoid fever, the disease which has the most characteristics in common with yellow fever. May not the first attack in this case be considered as an abortive one, and that set down as a relapse be really a genuine first attack of the disease?

Taking two days, then, as the duration of the mildest attack of yellow fever of which we have any precise knowledge, let us look a little further. In Case 2 we find four distinct periods, of two days each, clearly delineated; that is, a remission occurred on the morning of the third day, followed by an exacerbation of two days' duration; a more complete remission on the morning of the fifth day; this followed by a third exacerbation, and a still more complete remission on the seventh day; this again repeated, with a final remission on the ninth day. This case occurred at Fort Barrancas in 1873. Referring to Cases 20 and 21 (Plate IV.), which occurred at Governor's Island, New York harbour, in 1870, we see the same tendency to a remission on the third, fifth, seventh, and ninth days. This remarkable tendency, shown especially in mild cases, might be ascribed to the combined effects of yellow fever and a tertian form of malarial fever, but for the fact that the latter form of fever prevails to but a very slight extent at either of the localities mentioned, and for the more telling fact that we shall find our period of two days, or a multiple thereof, attending us in our further investigations as to the duration of yellow fever. This characteristic of the disease, to which, so far as I know, attention is now called for the first time, may require a modification of the statement just made, to the effect that yellow fever presents more points of resemblance to typhoid than to any other fever. This tendency to periodicity certainly gives it a strong family likeness to the malarial fevers.

Referring to Plate II. we find four of my cases at Fort Barrancas placed one above the other. In three (9, 10, 12) a complete remission is *recorded* on the morning of the sixth day, and in one on the morning of the fifth. Upon closer investigation we shall ascertain that in each of these cases the duration of the fever was exactly four days. In Case 11 the attack was inaugurated on the morning of the first day; and it terminated on the morning of the fifth, exactly four days. In the other three cases the paroxysm commenced on the evening of the first day, and a complete remission *was not observed* until 7 A. M. on the morning of the sixth, although it may have occurred at any time during the preceding night. The record for the previous evening was in one case 99.6°, and in the other two 101°.

The duration of these cases, then, was four days, or just twice that of our cases mapped on Plate I. The remaining cases on Plate II., of which five are from observations taken at the Pensacola Navy Yard in 1874; and one, a case of my own at Governor's Island, in 1870, are of

PLATE II.



No. 9.	Male,	aged	31;	Fort Barrancas,	Florida,	1873.
No. 10.	"	"	27;	" "	"	"
No. 11.	"	"	32;	" "	"	"
No. 12.	"	"	35;	" "	"	1874.
No. 13.	"	"	24;	Pensacola Navy Yard,		"
No. 14.	"	"	22;	" "		"
No. 15.	"	"	31;	" "		"
No. 16.	"	"		Governor's Island,		1870.
No. 17.	"	"	20;	Pensacola Navy Yard,		1874.
No. 18.	"	"	21;	" "		"

the same type; Nos. 15, 16, and 17 are of exactly, and Nos. 13, 14, and 18 of about four days' duration.

Wunderlich's statement, that, according to Schmeidlein, "from the fourth to the fifth day the temperature falls rapidly, and descends to the normal number, or even below," is therefore nearly in conformity with my own observations, so far as these cases are concerned. But we have still another type exhibited on our third chart, in which the duration of the fever is twice four days. It is evident that, if the paroxysm of fever commenced on the morning of the first day, a period of eight days would be shown by remission on the ninth day. But if it commenced in the evening, or during the night preceding, the observation made on the evening of the eighth day might show a return to the normal temperature. In the cases under consideration (Plate III.) a complete remission took place on the eighth day in four (19, 23, 24, 25); and on the ninth day in four (20, 21, 22, 26). Three of these cases (19, 20, 21) are from my own observations at Governor's Island in 1870; one (22) at Fort Barrancas, 1874. Two (23, 24) occurred at the Pensacola Navy Yard in 1874; and two (25, 26) are taken from Dr. Faget's second series of tables, as examples of the type of fever which prevailed at Memphis in 1873. We see that while these eight cases occurred at four different localities, and during three different years, they all present a remarkable uniformity as to duration.

Three well-defined types of fever, then, are shown by our graphic charts.

First. The simple, or simplex, as shown on Plate I., in which the paroxysm is of two days' duration.

Second. The duplex, as shown on Plate II., in which the paroxysm has a duration of four days.

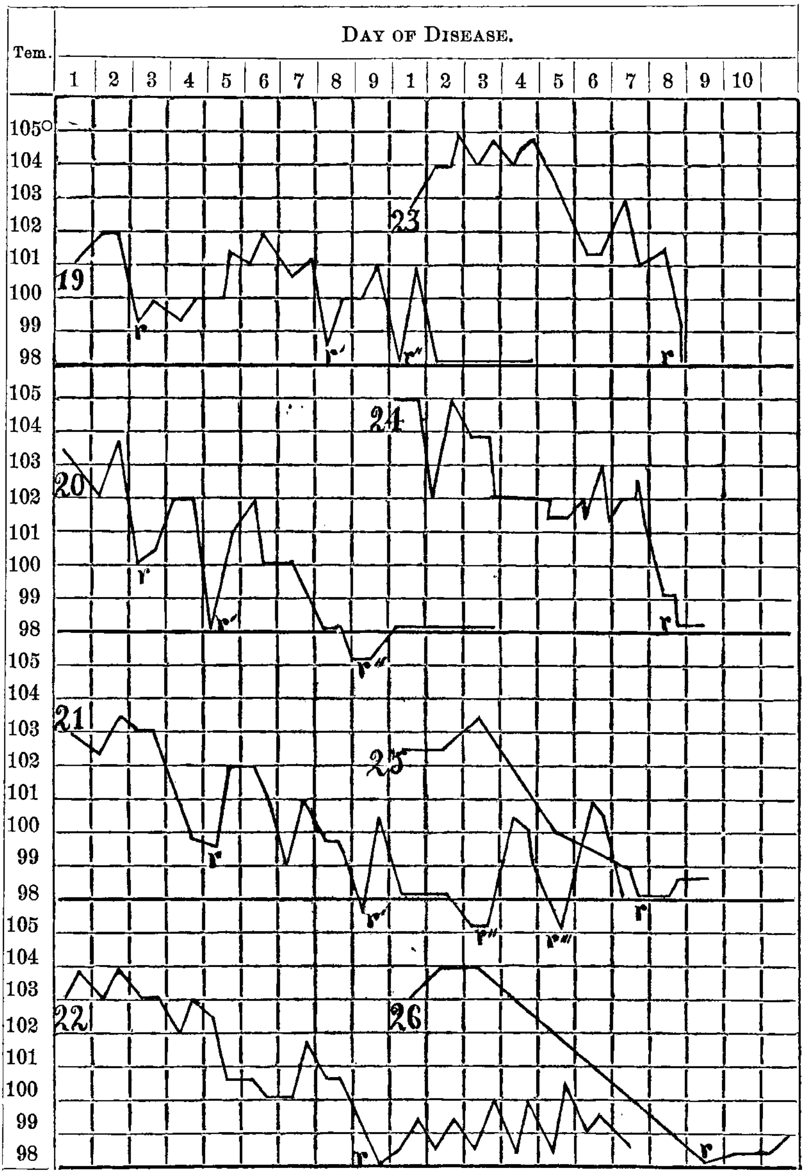
Third. The quadruplex, as shown on Plate III., in which the duration is eight days.

Case 2 on Plate I. should, perhaps, be considered of the quadruplex type, as it is plainly made up of four well-defined periods, each of two days' duration, and the course of the fever was not terminated until the fourth remission occurred on the morning of the ninth day.

Cases 20 and 21 are very instructive, as showing the compound nature of the quadruplex type. In case 20, we have a partial remission on the morning of the third day, and a complete one on the morning of the fifth. This case would have been grouped with those of the duplex type, if the observations had been discontinued at this point. A second paroxysm of four days' duration, followed by a complete and final remission, places it, however, among those of the quadruplex type.

In the 21st case, we have no remission on the third day, but a marked one on the fifth; and the period from the fifth to the ninth is clearly

PLATE III.



No. 19.	Male,		Governor's Island,	1870.
No. 20.	"		" "	"
No. 21.	"	aged 18;	" "	"
No. 22.	"	" 27;	Fort Barrancas,	1874.
No. 23.	"	" 31;	Pensacola Navy Yard,	"
No. 24.	"	" 25;	" "	"
No. 25.	Female,	" 18;	Memphis (from Dr. Faget's tables),	1873.
No. 26.	"	" 30;	" " " " "	"

divided into two equal portions by a partial remission on the morning of the seventh day.

We will now turn to Faget's tables to ascertain if the deductions arrived at are sustained by his observations. I shall first analyze the tracings from his first series of thirty cases, which occurred in New Orleans in 1870. In an investigation as to the duration of a fever, it is evident that all fatal cases must be ruled out, unless death occurred from a sequela of the fever, that is, after a complete remission had occurred. It is also necessary to exclude all cases that are incomplete. If observations were not made on the first day of the disease, it was probably because the patient did not come under treatment at the outset of his attack; and in such instances, especially among ignorant people, it is often difficult to fix the exact date of the seizure. In quite a number of Dr. Faget's cases, also, observations were discontinued before the temperature fell to the normal. These cases cannot be included in the investigation. Excluding, then, fatal, incomplete, and complicated cases, we have left but five of Dr. Faget's first series, viz., Nos. 6, 17, 21, 23, and 28. In Nos. 23 and 28, a complete remission occurred on the morning of the third day. These tracings I have copied upon my Plate I. (Nos. 6 and 7).

In Nos. 6, 17, and 21, the paroxysm of fever terminated on the morning of the fifth day. In No. 17, "accouchement at term" is noted as occurring on the sixth day, and in No. 21, a parotid abscess was developed. As both of these complications occurred after the remission, they do not furnish ground for excluding these cases. Tracing No. 5 on the first of my plates is copied from No. 18 of Dr. Faget's tables. It is excluded (and would not have been copied upon my plates, but for an oversight) because veratrum was given for the purpose of modifying the course of the fever, and also because observations were discontinued before the temperature reached the normal.[1]

In Dr. Faget's second series of tables, the observations were made by Dr. Saunders during the fatal epidemic at Memphis in 1873. Unfortunately for our object, which is to estimate with precision the duration of the paroxysm of fever in each case, Dr. Saunders has made but a single daily observation. The tables consequently give us no information as to what time during the first day the fever commenced. It is not improbable that in some instances the day upon which the first record was made was really the second day of the disease. In civil practice and during an epidemic, it is very commonly the case that patients taken sick late in the afternoon or during the night, are not seen by a physician until the next morning. The same source of error to which attention was called in the examination of my own charts, will exist to a greater degree in these, in which but a single observation was taken daily. That is, the remission which is observed and recorded upon one day may have in fact taken place during the preceding night, or even on the evening of the preceding day. These sources of error being borne in mind, we will proceed with our analysis of Dr. Saunders's tables. Excluding incomplete and fatal cases,[1] we have left 44 cases. In a majority of these the temperature fell one or more degrees below the normal, before reaction was established. It is much to be regretted that the extent and duration of the reactionary fever were not noted. In estimating the duration of the initial fever, we shall consider a fall to 98° (in a few cases a little above 98°) as terminating the paroxysm. The remarkable depression below this point, which in case 4 amounted to three degrees Fahrenheit, can hardly be considered a portion of the stage of fever, but rather represents a state of partial collapse (or the stage of calm, so often described by writers on yellow fever) and probably results from grave blood and tissue changes, produced during the period of fever. We arrange our results in tabular form as follows :—

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[1] I have considered any point above 99° Fahrenheit, an incomplete remission.

Day upon which remission occurred . . .	5th.	6th.	7th.	8th.	9th.	10th.	11th.	12th.
Number of cases . .	0	1	1	9	16	11	5	1

Our table shows that the fever which prevailed at Memphis was clearly of the type which we have named "quadruplex" in 25 out of 44 cases. In eleven cases the typical period was exceeded by twenty-four hours or less, in five by forty-eight hours or less, and in one by seventy-two hours or less. The fact that in a certain number of cases the duration of the paroxysm of fever exceeds the typical period which characterized the epidemic, is not surprising, and indeed was to be expected. The temperature line is apt to be deflected from its natural course, and may be maintained above the normal by a variety of causes. This would especially be looked for in severe cases.

It is only in the milder cases, and in those where there is no disturbing element—such as a complication, or active medication—that we can successfully study the natural history of any disease. In my relapse case, figured on Plate IV. (No. 11), the normal temperature was not reached until the fourteenth day of the disease, yet at the end of eight days a partial remission (p.) occurred, and at intervals of two days the same thing happened three successive times before the normal was finally reached.

Dr. Faget states in the preface to his brochure (*loc. cit.*) that the two points he desires to elucidate are "the continuity of the febrile action in yellow fever, and the fact that it is a distinct species of fever." Both points are without doubt established. I have endeavoured to show, in addition to this, that *in yellow fever, the paroxysm of fever has a definite duration of two, four, or eight days,* and that *there is some evidence*

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[1] 8, 12, 14, 17, 18, 20, 25, 26, 27, 29, 31, 32, 35, 37, 38, 39, 40, 41, 46, 47, 48, 49, 50, 51, 57, 59, 60, 61, 72.

that paroxysms of four and eight days' duration are compounded of two or four elementary paroxysms of two days each.

What has already been written demonstrates clearly enough that the temperature curve in yellow fever is characteristic. In uncomplicated cases, ending in recovery, it alone is sufficient to establish the diagnosis, when the record of the case is completed. But, it is highly important, in the interest of the patient, that the disease be recognized at the outset; and in the interest of the community, that first cases be promptly diagnosed and announced. Temperature observations afford us very valuable assistance in accomplishing this purpose, and a very positive opinion may, in some instances, be based upon them as early as the evening of the second day.

There is nothing characteristic in the chill, the cephalalgia, the lumbar pains, the congested eyes, and the appearance of the tongue, which mark the commencement of an attack of yellow fever. Careful temperature observations, however, enable us to exclude remittent fever, by the absence of any remission on the morning of the second day; or by its incomplete character, and the fact that it is not followed by an evening exacerbation.

The violence of the symptoms inaugurating the attack and the congested appearance of the eyes, together with the usually high indication of the thermometer at the first observation, will ordinarily be sufficient for the exclusion of typhoid fever. But in some instances (*e. g.* Cases 12, 13, Chart III.), the thermometric range is almost identical with that of typhoid for the first four days of the disease, and it is not until the characteristic defervescence occurs, that the diagnosis becomes established. The differential diagnosis between yellow fever and some of the exanthemata presents greater difficulties, and in many cases will probably be found impossible at so early a stage of the disease. On the third day, however, in the simple type, and on the fifth in the duplex, the diagnosis will be no longer doubtful. The quadruplex type may also be diagnosticated by the temperature curve, as early as the fifth day in a majority of cases. Complicated cases and those which prove fatal at an early day of the disease, present difficulties of diagnosis which can not be decided by the thermometer alone. The type of the disease in any particular case may also often be determined by the temperature observations taken on the first and second days. In the simple type the fever is highest at the outset and falls from the very first.[1] In the duplex type the temperature is higher on the second day than on the first (Nos. 10, 11, 14, 16, 18); or there is a more or less marked evening exacerbation (Nos. 12, 13, 15, 17).

In the quadruplex type, as shown by Dr. Faget's tables of cases from the Memphis epidemic of 1873, the temperature does not reach its acme until the third day (Nos. 25, 26, Plate III.); or if the acme is reached sooner, the temperature is maintained at this point until the third day, when defervescence commences.

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[1] Case 2 on my Plate I. is the only exception to this rule, and it is doubtful whether this case should not be considered one of the quadruplex type.

The above remarks upon diagnosis of type also apply to prognosis as to duration.

The value of temperature observations in making a prognosis as to result, will be apparent upon reference to the following table:—

Cases in which the temperature was—	No. of Cases.	No. of Deaths.	Percentage of Deaths to Cases.
107° and above	2	2	100
106°—107°	6	6	100
105°—106°	16	10	63
104°—105°	39	10	25
103°—104°	49	1	2
102°—103°	15	0	0
101°—102°	9	1	1
Total	136[1]	30	22

It is probably impossible to determine the type in fatal cases, such as are figured on Plate IV. (Nos. 1, 2, 3), and we cannot, consequently, decide from our charts whether the prolonged (quadruplex) type furnishes the most fatal cases, or otherwise. The great fatality of the Memphis epidemic, however, in which this type prevailed, and the extremely mild character of the disease in such cases as as are figured on Plate 1, gives support to the supposition that the severity of the disease is directly proportioned to the duration of the paroxysm of fever.[2] This is, however, contrary to the statement made by several writers, viz., that the duration of the disease is in inverse ratio of the violence of the attack.[3]

That the quadruplex type is not, however, necessarily a severe disease, is shown by such mild cases as No. 19 on my Plate IV., and by numerous tracings from the Memphis epidemic (Nos. 71, 56, 54, 52, 51, C.).

The indications for treatment furnished by our charts are:—

First. In those cases in which the thermometer indicates 104° or above, to promptly reduce the temperature by such means as are found to be successful in other diseases. For this purpose there are various vaunted remedies. But in view of the great depression of the vital powers which follows the paroxysm of fever, I should hesitate to employ some of them (*e. g.* the lancet and veratrum). Modern therapeutics has, however, demonstrated the antipyretic power of two remedies, which I believe may be found useful in the disease under consideration. One, quinia in large doses, has already been extensively used, with the object of abbre-

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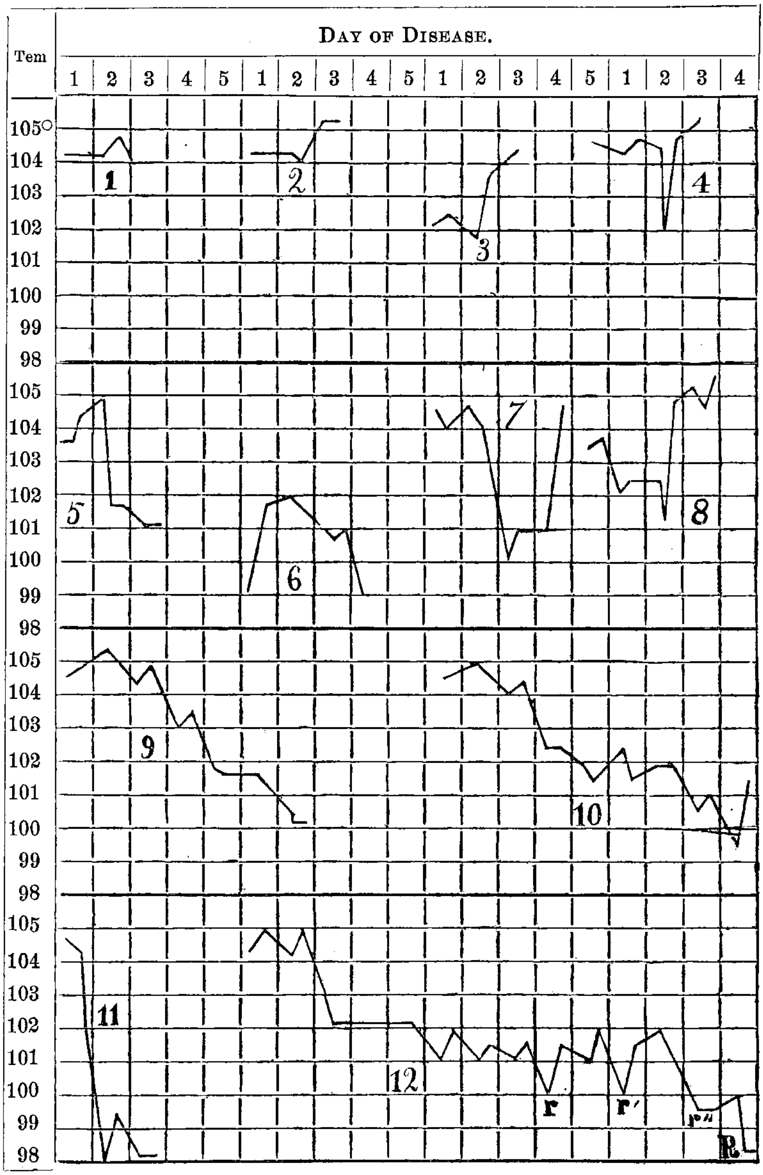
[1] Rejected as incomplete, Nos. 1, 22, and 24, of Dr. Faget's 1st series of tables.

[2] That the gravity of the case is, in a majority of instances, indicated by the degree of temperature reached, is clearly shown by the above table.

[3] Wood, vol. i., page 307; Reynolds, A System of Medicine, vol. i., page 660.

PLATE IV.



No. 1. Male, aged 22; Pensacola Navy Yard, 1874.
No. 2. " " 34; " " "
No. 3. " " 26; " " "
No. 4. " " 36; " " "
No. 5. " " 25; " " "
No. 6. " " 55; " " "
No. 7. " " 26 " " "
No. 8. " " 39; " " "
No. 9. " " 30; Fort Barrancas, 1873.
No. 10. " " 28; " " "
No. 11. Female, " 28; " " "
The above are all fatal cases except No. 11.

viating the duration of the fever, or neutralizing the effect of the yellow fever poison. That it has not this power, is now generally conceded by those who have had most experience in the treatment of the disease. May it not be, however, that the beneficial effects, so often claimed for this medicine in large doses, are real, and are due to its antipyretic power, by which the danger to life from the extreme pyrexia which characterizes certain epidemics is averted?

The other means of overcoming an excessive and threatening degree of pyrexia, which has recently found much favour in the treatment of the same state in other diseases, is the external application of cold water, by means of baths or the wet pack. That the temperature may be reduced in this way, I have proved in two instances, in which I gave yellow fever patients cold baths on the second day of the disease. In neither could I discover that any injurious effect was produced by this mode of treatment. One (No. 10, Plate II.) made a good recovery, and the other (No. 10, Plate IV.) died on the ninth day. I am well aware that many physicians will be horrified by this suggestion. And at a later stage of the disease I am myself especially careful to protect my patients from any exposure to cold, as congestion of the kidneys and suppression of urine are very sure to occur, if by any means the cutaneous transpiration is checked. But that life may be saved in some instances where the pyrexia is excessive, by a resort to the cold bath, after the method recommended by the German physicians,[1] is my strong conviction.

In some fatal cases which we have mapped (Nos. 1, 2, 3, 4, 5, Plate IV.), the fatal issue can hardly be attributed to the pyrexia alone, as this was not extreme. In one (No. 6) it is remarkable for being very slight, the highest point touched being barely 102°.[2] To what shall we attribute death in these cases? I am inclined to agree with Dr. Faget (*loc. cit.* pages 34 and 35) in believing that the yellow fever poison has a special action on the central organ of the circulation, the heart, which is similar to that possessed by certain vegetable poisons (*e.g.* veratrum and aconite), and that these deaths are the result of paralysis of the heart, produced by the yellow fever poison. Dr. H. C. Wood, in his recent work on therapeutics, in speaking of the action of viridia (page 136), says:—

> "It has not yet been experimentally determined exactly how viridia depresses the circulation; but, as I have found that previous section of the vagi does not influence the cardiac action of this alkaloid, and that when it is placed directly upon the heart of the turtle, it acts at once and powerfully, the probabilities are that it influences the heart itself or its contained ganglia."

The indication in such cases, then, seems to be to support and stimulate the heart's action, and the use of such medicines as veratrum and aconite for their antipyretic effect, is contraindicated by their depressing effect upon the organ of the circulation, which is probably the real cause of their power to lower the temperature.

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[1] Niemyer, vol. ii. page 602, Am. ed.; Ziemssen, vol. i., page 210, Am. ed.

[2] Case of Commodore Woolsey, U. S. Navy, commanding the Pensacola Navy Yard at the outbreak of the epidemic of 1873.

The remarkable depression of the temperature below the normal, which occurred in several of Dr. Saunders's cases at Memphis (Faget's tables, second series, Nos. 1, 4, 11), furnishes another indication for treatment. It is evident that external warmth may here be needed, for the purpose of sustaining the bodily heat and equalizing the circulation.

Finally, that portion of our charts, 9 and 10, Plate II., which shows the reactionary fever, also teaches us a lesson as to the treatment of this stage of the disease (or sequelæ of it rather). It is evident that during the continuance of this fever the patient must be kept in bed, and subjected to careful restriction in diet, etc. It is at this time that undue exertion or imprudence in diet so often changes the aspect of a case from that of promising convalescence to one of the gravest character. This results from visceral congestions,[1] which, in all stages of yellow fever, are exceedingly prone to occur, and, indeed, are the immediate cause of death in by far the greater number of fatal cases.

We also learn from the nature of this fever, which is irritative, or easily influenced by external conditions, such as is characteristic of states of debility, that the vital powers require support. And experience teaches that those means which are most potent for the accomplishment of this purpose, viz., concentrated nourishment and stimulants, are the remedies to be relied upon for abbreviating this irritative reactionary fever.

ART. IX.—*A Case of Elephantiasis Arabum.* By JOHN NEILL, A.M., M.D., Clinical Professor of Surgery in the University of Pennsylvania. (With two wood-cuts.)

The name given to this disease seems to require explanation. The term *Elephantiasis Arabum* suggests that the disease has both a generic and a special character. The word, *Elephantiasis*, implies massive, bulky

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[1] Congestion of the stomach, producing a feeling of weight at the epigastrium, nausea, and finally extravasation of blood and black vomit; congestion of the kidneys, producing albuminous urine, suppression, and death from uremic poisoning; congestion of the liver, causing arrest of function; and congestion of the brain, producing wild delirium, coma, and death: These congestions are commonly attributed to an altered condition of the blood, but it may be questioned whether they are not rather the result of partial paralysis of the nervous centres for the organs implicated; just as the early failure of the heart's action, in certain cases, is supposed to be from the paralyzing effect of the specific poison which produces the disease.